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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/675,788 | 09/30/2003 | Ingobert Schmadel | 3931.00002 | 6542 |
| 7590 | 04/26/2004 | | EXAMINER | |
| Gerald E. McGlynn, III Bliss McGlynn. P.C. Suite 600 2075 West Big Beaver Road Troy, MI 48084 | | | NGUYEN, SANG H | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2877 | |
| DATE MAILED: 04/26/2004 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/675,788 | SCHMADEL, INGOBERT | |
| | Examiner | Art Unit | |
| | sang nguyen | 2877 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 30 September 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3 and 5-9 is/are rejected.
- 7) Claim(s) 4 and 10-20 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/30/03.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMurtry (U.S. Patent No. 5,681,981) in view of Charles (U.S. Patent No. 5,259,710).

Regarding claims 1, 3, 6, and 9; McMurtry discloses a spatial reference system, comprising:

- at least one artifact assembly (figures 3-4) having a measuring bar assembly (16 of figure 3) having an inner member (20 of figure 3) with a proximate end and a distal end (figure 3), and outer member (18 of figure 3) with a proximate end and a distal end (figure 3);
- each of the inner and outer members (20,18 of figure 3) having a predetermining length (figures 2-3) and predetermined coefficient of thermal expansion (col.4 lines 35-45); and See figures 1-14.
- a first end probe considered being a first sphere ball (14 of figure 3) fixedly mounted the proximate end of the inner member (20 of figure 3) and a second probe considered to be a second sphere ball (14 of figure 3) fixedly mounted to the distal end of the second inner member (20 of figure 3) . See figures 1-14.

However, McMurtry teaches all of features in claimed invention except for a compensating member with a proximate end and a distal end disposed between the inner member and the outer member such that the distal end of the outer member is fixedly mounted to the distal end of the compensating member, the proximate end of the compensating member is fixedly mounted to the proximate end of the inner member, and the thermal expansion of the inner and the outer members is substantially eliminated by the thermal expansion of the compensating member. However, Charles teaches that it is known in the art to provide a compensating member (64 of figure 7) with a proximate end and a distal end (figures 6 and 8) disposed between the inner member (44 of figure 7) and the outer member (42 of figure 7) such that the distal end of the outer member (42 of figures 7-8) is fixedly mounted to the distal end of the compensating member (64 of figure 8), the proximate end of the compensating member (64 of figure 8) is fixedly mounted to the proximate end of the inner member (44 of figure 8), and the thermal expansion considered temperature of the inner and the outer members (44, 42 of figures 7-8) is substantially eliminated or canceled out by the thermal expansion considered to be temperature of the compensating member (64 of figures 7-8 and col.2 lines 20-30 and col.20-59). See figures 1-12.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify spatial reference system of McMurtry with a compensating member with a proximate end and a distal end disposed between the inner member and the outer member such that the distal end of the outer member is fixedly mounted to the distal end of the compensating member, the proximate end of the compensating member is fixedly mounted to the proximate end of the inner member,

and the thermal expansion of the inner and the outer members is substantially eliminated by the thermal expansion of the compensating member as taught by Charges for the purpose of virtually self-compensating in response to changes in ambient temperature, an important consideration in maintaining the registry of programmed and actual locations of tool point in narrow-tolerance, numerically controlled machining.

Regarding claim 2; McMurtry teaches that a first end adapter considered to be a first magnetic socket (22 of figure 3) adapted to a first end probe considered to be a first ball (14 of figure 3) and a second end adapter considered to be a second magnetic socket (22 of figure 2) adapted to a second end probe considered to be a second ball (14 of figure 3), and the first end probe and the second end probe (14 of figure 3) adapted to provide the end points of the measuring bar (16 of figure 3) as a measuring standard or scale standard (24 of figure 3).

Regarding claims 5 and 8; McMurtry teaches that the first end probe and the second end probe (14 of figures 2-3) are spherical.

Regarding claim 7; McMurtry discloses a first end adapter (22 of figure 3) disposed between the first inner member (20 of figure 3) and the first end probe (14 of figure 3), and a second end adapter (22 of figure 3) disposed between the second inner member and the second end probe (14 of figure 3).

Allowable Subject Matter

Claims 4 and 10-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record, taken alone or in combination, fails discloses or render obvious a spatial reference system comprising all the specific elements with the specific combination including of a distance from the point at which the proximate end of the outer member is fixedly mounted to the first end adapter to the point at which the distal end of the outer member is fixedly mounted to the distal end of the compensating member is the same as a distance from the point at which the proximate end of the compensating member is fixedly mounted to the proximate end of the inner member to the point at which the distal end of the inner member is fixedly mounted to the second end adapter, such that the inner member and outer member have the same effective length in set forth limitation of claim 4 in combination with rest of the limitation of independent claims 1 and 6.

The prior art of record, taken alone or in combination, fails discloses or render obvious a spatial system comprising all the specific elements with the specific combination including of an outer member formed in a generally cylindrical shape with an open end and a closed proximate end thereby forming a central cavity, the outer member adapted to fit within an open end of the measuring bar such that the distal end of the outer member is fixedly mounted to one of the ends of measuring bar, an inner member with a proximate end and a distal end, the cavity of outer member adapted to receive the proximate end of the inner member so that the proximate end of the inner member fits within the outer member and is fixedly mounted to the proximate end of the outer member within the cavity with the distal end of inner member extending beyond

the distal end of the outer member to support and retain one of the end probes in set forth limitation of claim 110 in combination with rest of the limitation of independent claim 9.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McMurtry (6,662,461) discloses performing measuring or calibration on positioning machines; Sylvia (6,293,028) discloses construction tool and method of use; Pahk et al (6,269,544) discloses apparatus for measuring three dimensional volumetric errors in multiaxis machine tool; McMurtry et al (5,813,287) discloses coordinate positioning machine; Cannon (5,732,474) discloses visual aid and manipulative for demonstrating geometric and trigonometric functions; Vander Wal, III (5,430,948) discloses coordinate measuring machine certification system; Laroze et al (5,164,722) discloses method of calibrating an electric remote control device; Burdekin (5,052,115) discloses accuracy testing device; Breyer (5,014,444) discloses probing device for a coordinate measuring apparatus; Bryan (4,435,905) discloses telescoping magnetic ball bar test gage; or Kakino et al (EP 0 258 471) discloses method and device to measure motion errors of NC machine tools.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Sang Nguyen whose telephone number (571) 272-2425. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Frank Font, can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

SN

Nguyen/ sn

April 12, 2004

Frank G. Font
Frank G. Font
Supervisory Patent Examiner
Art Unit 2877
Technology Center 2800